

Rhodora

JOURNAL OF THE
NEW ENGLAND BOTANICAL CLUB.

Conducted and published for the Club, by

BENJAMIN LINCOLN ROBINSON Editor-in-chief.

FRANK SHIPLEY COLLINS

MERRITT LYNDON FERNALD } Associate Editors.

HOLLIS WEBSTER

WILLIAM PENN RICH

EDWARD LOTHROP RAND } Publication Committee.

Vol. 15.

May, 1913.

No. 173.

CONTENTS

Systematic Studies on <i>Oenothera</i> ,— III. <i>H. H. Bartlett</i> . . .	81
Forms of <i>Ophioglossum vulgatum</i> . <i>S. F. Blake</i> . . .	86
Notes on the Algae of Georgian Bay. <i>A. B. Klugh</i> . . .	88
A northeastern Variety of <i>Carex Deweyana</i> . <i>M. L. Fernald</i> . .	92
An additional Note on Nantucket Lichens. <i>R. H. Howe, Jr.</i> .	93
Extended Ranges of some Connecticut Plants. <i>R. W. Woodward</i>	94
A new Color Guide (review)	96
A Flora of the Connecticut Valley in Massachusetts (review)	97
<i>Scirpus Peckii</i> in Connecticut. <i>A. E. Blewitt</i>	98
A Summer Course on the Flowering Plants (notice) . . .	99
Two Records of <i>Panicum calliphyllum</i> Ashe. <i>S. F. Blake</i> . .	99
<i>Cyperus Grayii</i> in Rhode Island. <i>R. W. Woodward</i> . . .	100

Boston, Mass.

1052 Exchange Building.



Providence, R. I.

Preston and Rounds Co.

RHODORA.—A monthly journal of botany, devoted primarily to the flora of New England. Price \$1.50 per year (domestic and foreign); single copies 15 cents. Prices of Volumes 1 and 2 (1899 and 1900) on application. All remittances by check or draft, except on Boston or New York, must include ten cents additional for cost of collection. Notes and short scientific papers, relating directly or indirectly to the plants of the northeastern states, will be gladly received and published to the extent that the limited space of the journal permits. Forms will be closed five weeks in advance of publication. Authors (of more than one page of print) will receive 25 copies of the issue in which their contributions appear. Extracted reprints, if ordered in advance, will be furnished at cost.

Address manuscripts and proofs to

B. L. ROBINSON, 3 Clement Circle, Cambridge, Mass.

Subscriptions, advertisements, and business communications to

W. P. RICH, 300 Massachusetts Avenue, Boston, Mass.

Single copies may be had from

E. L. RAND, Corresponding Sec'y N. E. Botanical Club,

1052 Exchange Building, Boston, Mass.

Entered at Boston, Mass., Post office as Second Class Mail Matter

KEY TO NEW ENGLAND TREES, Wild and Commonly Cultivated, based primarily upon leaf characters, by J. FRANKLIN COLLINS and HOWARD W. PRESTON. Price 40c. net. PRESTON & ROUNDS Co., Providence, R. I.

CARD-INDEX OF NEW GENERA, SPECIES AND VARIETIES OF AMERICAN PLANTS, 1885 TO DATE.

For American taxonomists and all students of American plants the most important supplement to the Index Kewensis, this catalogue in several ways exceeds [the] latter work [in detail, since it lists not merely the flowering plants, but pteridophytes and cellular cryptogams, and includes not merely genera and species, but likewise subspecies, varieties and forms. A work of reference invaluable for larger herbaria, leading libraries, academies of sciences, and other centers of botanical activity. Issued quarterly, at \$15.00 per 1000 cards.

GRAY HERBARIUM of Harvard University,

Cambridge, Mass., U. S. A.

CHECK LIST OF GRAY'S MANUAL, 7th EDITION, compiled by M. A. DAY. Leatherette. Pocket size. Invaluable for collectors' memoranda and herbarium records. Published and sold by the GRAY HERBARIUM, Cambridge, Mass. Price post-paid 20 cts. each. Ten copies \$1.50.

Advertisements of Nurserymen and Dealers in Botanical and other Scientific Publications are inserted in these pages at the following rates per space of 4 in. by 3-4 in. 1 year \$4.00, 6 months \$2.50.

Rhodora

JOURNAL OF

THE NEW ENGLAND BOTANICAL CLUB

Vol. 15.

May, 1913.

No. 173.

SYSTEMATIC STUDIES ON OENOTHERA,—III. NEW SPECIES FROM ITHACA, NEW YORK.

HARLEY HARRIS BARTLETT.

IN 1911 Prof. G. F. Atkinson cultivated experimentally several *Oenotheras* of the *Oe. biennis* alliance found wild by him in the vicinity of Ithaca, New York, in order to carry on a study of the hybridization phenomena exhibited by these plants. At the suggestion of Dr. Heinrich Hasselbring he sent herbarium material and seeds of three strains to the writer so that they might be compared with certain species which had already been cultivated and given provisional names in the writer's garden at Bethesda, Maryland. One of the Ithaca strains represented a species quite distinct from any which had been previously received, and was treated in this article, as first submitted for publication, as a new species, under a name proposed by Prof. Atkinson. What seems to be the same species, however, was named *Oenothera angustissima* by Gates¹ in an article which reached the editor a few days before this one. The name *Oe. angustissima* has therefore been substituted for Prof. Atkinson's but it has not seemed desirable to withdraw the diagnosis, which is directly comparable with the diagnoses of the other species from Ithaca. The other two strains belonged to species already represented in the writer's collection. The one described as *Oenothera nutans* had been cultivated not only in the Bethesda garden but also, by Prof. B. M. Davis, at Philadelphia, from seed collected at Havre de Grace, Maryland. The other, *Oenothera pycnocarpa*, was one of several types which Dr. Hasselbring had recognized as distinct, and had collected

¹ Gates, R. R. A new *Oenothera*. RHODORA, xv, pp. 45-48. 1913.

for the writer near Flint, Michigan. Because neither the strain from Havre de Grace nor that from Flint has been used in experimental work, it seems best to designate the strains from Ithaca as types of *Oenothera nutans* and *Oenothera pycnocarpa*. Only thus is it possible to insure the unquestionable applicability of the names which will be used shortly by Prof. Atkinson in reporting on his hybrids, since the Ithaca strains may, when grown side by side with those from Maryland and Michigan, show characteristics which one would fail to detect in herbarium specimens. Even in the vicinity of Ithaca there are forms of dubious identity with *Oenothera pycnocarpa* which indicate the propriety of taking every precaution in designating the type of this species. It may therefore be understood that the types of *Oe. nutans* and *Oe. pycnocarpa* described below are specimens collected at Ithaca and preserved in the Cornell University Herbarium. The descriptions have been drawn up from portions of the types in the writer's collection and from notes on the Cornell cultures and specimens kindly supplied by Prof. Atkinson.

OENOTHERA ANGUSTISSIMA Gates. Biennis. Rosula autumnalis compacta depressa viridis, hieme rubescens; foliis planis acutis anguste oblanceolatis 10–19 cm. longis, 2–2.5 cm. latis, utrinque exigue et minutissime puberulis, nervis margineque rubris, lamina plerumque sine maculis rubris, exterioribus longe petiolatis, et, praecipue infra mediam, valde sinuato-dentatis. Planta matura 0.5–1 m. alta, parte inferiore vel simplex vel ramos cauli primario similis sed tertia parte humiliores ferens, superne usque ad inflorescentiam ramis axillaribus vel abbreviatis vel rosulatis praedita. Caulis ruber teres minutissime pilis curvatis acutis verrucosis, pluribus brevissimis, paucis aliquantum longioribus puberulus. Folia sinuato-denticulata utrinque subglabra autumnis ignicantia, apice basique acuta, anguste lanceolata, inferiora ca. 13 cm. longa, 17 mm. lata, brevipetiolata, superiora 5 cm. longa, 8 mm. lata, sessilia. Inflorescentia juvenalis propter rubros calycum apices spectabilis, e spicis terminali aliisque lateralibus brevioribus composita. Bractae persistentes foliorum modo superiorum obscure denticulatae, 3–4 cm. longae, 4–6 mm. latae, floribus 5–6 cm. longis superatae, apice acuminatae, basi valde rubrotinctae, obtusae vel rotundatae. Ovarium 10–12 mm. longum, sub lente pilis erectis apice rotundatis viscido-puberulum. Hypanthium 25–30 mm. longum etiam viscido-puberulum. Calycis segmenta nondum explicata gemmam quadrangulam 20 mm. longam 4 mm. crassam apicibus liberis rubris distantibus infraterminalibus 3–4 mm. longis coronatam formantia, ad basin versus solum exigue viscido-puberula, sed apicem rubrum versus pilis sparsis longioribus curvatis acutis praedita. Petala flava propter

texturam valde membranaceam cito marcescentia, obcordata, 15–18 mm. longa, 12–15 mm. lata, paululo plicata. Stamina stigmata attingentia, 12–14 mm. longa. Fructus ca. 20 mm. longus, infra mediam ca. 4 mm. crassus, sursum angustatus, quadrangulus, minute viscido-puberulus, costis plerumque rubris.—*Atkinson* No. 9, Ithaca, New York.

Oenothera nutans Atkinson & Bartlett sp. nov. Biennis. Rosula autumnalis compacta, depressa, rubro-maculata; foliis valde undulatis, acutis, lanceolatis, 20–30 cm. longis, 5–6 cm. latis, utrinque sparsim pubescentibus, exterioribus ad basin petiolatam versus solum modice sinuato-dentatis, apicem versus distanter denticulatis, fere integerrimis. Planta matura 1–1.5 m. alta, deorsum ramosa, ramis numerosis, collo tumido enatis, cauli primario similibus sed 20–30 cm. brevioribus, sursum usque ad inflorescentiam ramulis brevissimis abortivis axillaribus praedita. Caulis ruber et viridis conspicue sulcatus, deorsum modice pilosus, sursum minute puberulus et pilosus, longioribus pilis basi rubro-tuberculatis. Folia lanceolata distanter denticulata, utrinque pubescentia, praecipue subtus in nervis; inferiora petiolata apice basique acuta 15–24 cm. longa, 3.5–5 cm. lata, mediocria 12 cm. longa, 3.5 cm. lata, superiora, infra inflorescentiam sita, acuminata, ca. 5.5 cm. longa, 1 cm. lata. Inflorescentia caulem primarium terminans e spicis pluribus composita, lateralibus longis patentibus, aliae, ramos inferiores terminantes saepe simplices, axe deorsum rubro, sursum viridi. Bracteae cito caducae, lanceolatae ca. 2 cm. longae 5 mm. latae, textura coloreque calycis segmentis valde similes. Flores mediocres ca. 70 mm. longi cito marcescentes, tum deinde nutantes. Ovarium, ca. 9 mm. longum et hypanthium gracile ca. 38 mm. longum pilis paucissimis longis curvatis acutis instructa, et exigue pilis rectis apice rotundatis viscido-pubescentia. Calycis segmenta nondum explicata gemmam quadrangulam ca. 22 mm. longam, 4 mm. crassam, inferne fere glabram superne sparsim pubescentem formantia, apicibus liberis viridibus inter se appressis terminalibus 4 mm. longis, pilis numerosis patentibus acutis vestitis. Petala obovata retusa vix emarginata, sub-erosa, ca. 22 mm. longa, 19–20 mm. lata. Stamina petalis aequilonga stigmata attingentia. Fructus ca. 23 mm. longus, infra mediam 5 mm. crassus apicem versus angustatus, viridis, absque pilis rubro-tuberculatis, sparsim pilosus et exigue viscido-pubescent, aetate nitidus fere glabratus, valvulorum apicibus truncatis. Semina diametro ca. 1 mm. castanea.—Type, *Atkinson* No. 2, Ithaca, New York.

Oenothera pycnocarpa Atkinson & Bartlett sp. nov. Biennis. Rosula autumnalis compacta, depressa, viridis; foliis oblanceolatis, utrinque pubescentibus, exterioribus 20–35 cm. longis 4–5 cm. latis, longe petiolatis, infra mediam profunde pinnatifidis, planis vel plus minusve undulatis, albo-nervatis. Planta matura 1.5–2 m. alta deorsum ramosa, ramis strictis numerosis collo tumido enatis, caule primario dimidio brevioribus, sursum usque ad inflorescentiam ramulos

brevissimos vel rosulatos ferens. Caulis viridis vel aetate paulum rubro-tinctus, superiore parte fere teres, inferiore parte interdum subangulosus, pilis brevibus arcuatis crispis aliisque multo longioribus patentibus basi rubro- vel viridi-tuberculatis vestitus. Folia utrinque pubescentia, acuminata, petiolata, denticulata, inferiora spatulata 15-24 cm. longa, 3-4 cm. lata, saepe ad basin versus pinnatifida, mediocria anguste lanceolata, 12-18 cm. longa, 22-33 mm. lata, superiora 6-8 cm. longa 10-20 mm. lata. Inflorescentiae plerumque simplices, vel primaria spicis paucis lateralibus strictis quam terminali multo brevioribus instructa. Bractee virides foliaceae persistentes sessiles ca. 5 cm. longae, 6-7 mm. latae, denticulatae, apicem hypanthii plerumque attingentes, pubescentes. Flores mediocri ca. 72 mm. longi, textura firmiusculi, non cito marcescentes. Ovarium ca. 14 mm. longum dense cum pilis ascendentibus longis acutis aliisque rectis brevibus apice rotundatis viscidis tectum. Hypanthium ca. 38 mm. longum viscido-pubescentis etiam pilis longioribus curvatis exornatum. Calycis segmenta nondum explicata gemmam quadrangulam 23-25 mm. longam, 5 mm. crassam, ambabus pilorum speciebus dense vestitam formantia, apicibus liberis viridibus inter se appressis terminalibus 3-5 mm. longis. Petala cuneato-obcordata profunde emarginata firmiuscula plana flava. Fructus 2.5-3.3 cm. longus a bractea persistenti superatus basi 5 mm. crassus apicem versus angustatus, pubescens, valvulorum apicibus truncatis. Semina 1.5 mm. longa.—Type, *Atkinson* No. 1, Ithaca, New York.

The following summary will serve to indicate the characters which distinguish these three species from one another. It will of course prove entirely misleading if any attempt is made to apply it in the identification of *Oenotheras* from other localities, without checking up other characters included in the foregoing diagnoses. Nevertheless it is presented in the hope that it may be useful to local botanists who would take an interest in the problem of differentiating their local elementary species of *Oenothera* if they knew the nature of some of the characters which have been found constant in heredity and which should therefore be looked for in the field.

- | | |
|--|---------------------------|
| Free tips of the calyx segments infraterminal; therefore widely separated in bud | <i>Oe. angustissima</i> . |
| Free tips of the calyx segments terminal; therefore in contact in bud. | |
| Bracts caducous when the flower wilts | <i>Oe. nutans</i> . |
| Bracts persistent until the capsules ripen | <i>Oe. pycnocarpa</i> . |

Oenothera angustissima. Rosette leaves flat, green, not spotted, red-nerved, becoming red in the winter, outer ones sinuate-dentate. Stem red, terete with no red-tuberculate hairs. Leaves almost glabrous, fiery red in autumn. Bracts persistent, red at the base.

Free tips of the calyx segments bright red. Petals of very delicate texture, somewhat plicate, quickly wilting.

Oenothera nutans. Rosette leaves crinkled, red-spotted, with reddish mid-vein, not becoming uniformly red in the winter, outer ones slightly sinuate-dentate. Stem red and green, channeled, with red-tuberculate hairs. Leaves moderately pubescent on both sides. Bracts yellowish-green or nearly colorless, short, quickly deciduous. Free tips of the calyx segments green. Flower of delicate texture, quickly wilting and then nodding; petals somewhat plicate.

Oenothera pycnocarpa. Rosette leaves flat or only somewhat crinkled, green, white-nerved, outer ones deeply pinnatifid. Stem green, nearly terete, with red-tuberculate hairs. Leaves rather densely pubescent on both sides. Bracts leaf-like, persistent. Free tips of the calyx segments green. Flowers of firm texture, not wilting quickly, and not noticeably nodding when wilted. Petals not plicate.

Oenothera angustissima, is not closely related to the two other species. It has its nearest allies in two undescribed species which are known in Maryland and Virginia and which doubtless have a wider distribution.

Oenothera nutans and *Oenothera pycnocarpa* would be placed by most botanists in *Oenothera biennis*. Both of them differ from that species, as it is interpreted in the last article of this series, in the mode of branching. *Oe. biennis* has either an inflorescence-bearing branch or a flower in every axil. The leaves grade uniformly into the bracts so that the lower flowers are much exceeded in length by the leaf-like bracts which subtend them. *Oe. nutans* and *Oe. pycnocarpa* agree in that the long basal inflorescence-bearing branches are separated from the inflorescence of the primary stem by an interval in which the leaf-axils are occupied by abbreviated, frequently rosette-like, vegetative branches. Prof. Atkinson has in preparation a paper on hybrids of these two species which will include illustrations of the type plants.

BUREAU OF PLANT INDUSTRY, Washington, D. C.

FORMS OF *OPHIOGLOSSUM VULGATUM* IN EASTERN
NORTH AMERICA.

SIDNEY F. BLAKE.

SEVERAL years ago during a month's collecting in southern New Hampshire I discovered a rather large colony of *Ophioglossum vulgatum*, from which when the spikes became ripe over four hundred specimens were collected. The plants, which grew in two adjacent bits of sphagnum meadowland, usually in the open but occasionally on the edges of thickets, show great variation in size, shape, and position of leaf, size of spike, and number of fronds, sufficient to constitute half a dozen "species" if brought back by collectors from as many regions. Usually there is but one frond on a rootstock, but not rarely two are present, either both fertile or one sterile, and equal or unequal in size. The presence of two fronds on a rootstock, which has been emphasized as a more or less distinctive mark of *Ophioglossum arenarium* (= *O. vulgatum* var. *minus* Moore), is shown by specimens in the Gray Herbarium to be of not infrequent occurrence practically throughout the American range of *O. vulgatum*, and is not correlated with any other characters either of size or leaf form. It apparently occurs rather more frequently in *O. Engelmanni* Prantl, but can hardly be considered of any importance in distinguishing species or varieties in this immediate group.

The ordinary leaf form in this series seems to be oblong, obtuse or rounded at tip, broadest about the middle and only slightly narrowed at the ends, with the base somewhat decurrent on the stem. An average specimen measures 5 by 1.5 cm., with extremes of 7 by 2 to 3.8 by 1 cm. The sterile segment is situated almost always at or above the middle of the hypergean axis, but occasionally at a considerable distance below it, a feature upon which stress has also been laid in descriptions of *O. arenarium*, but which frequently occurs in some individuals of a colony of otherwise normal *O. vulgatum*. This common oblong leaf grades on the one hand into a form with shorter and broader ovate leaf, more conspicuously contracted at the base, and on the other connects with a larger form having oblong or ovate-oblong sterile segment as much as 96 mm. in length. Some broader-leaved intermediates lead to plants with oval leaf more than half as

broad as long, in an extreme case 45 by 27 mm. All these forms, although dissimilar enough in their extremes, intergrade so gradually and completely that their recognition even as formae does not seem practicable, but the following plant, though it also inosculates with the other forms, is so distinct and generally recognizable as to deserve a name.

OPHIOGLOSSUM VULGATUM L. f. **pseudopodum**, n. forma, folio oblongo obtuso basin versus petioliforme angustato. Sterile segment oblong, obtuse, 69–122 mm. long, 9–26 mm. wide, situated at or below middle of axis, tapering into a conspicuous petiole-like base one-fourth to two-thirds the length of rest of leaf. Specimens examined: MAINE: Bridgton, Cumberland Co., Aug. 1905, *M. H. Grant*; VERMONT: Ferrisburg, 19 June 1881, *Faxon*; NEW HAMPSHIRE: sphagnous meadow, Sharon, Hillsboro Co., 2 Aug. 1909, *Blake* (TYPE SHEET no. 682 in my herb.); other specimens collected at various dates; CONNECTICUT: Manchester, 1899, *A. W. Driggs*; MICHIGAN: low dump ground, Aug. 1888, *Farwell* 584; ARIZONA: Huachuca Mts., Sept. 1882, *Lemmon*.

The following plant, lately described by Clute as a variety of *O. vulgatum*, should be reduced to formal rank as a mere ecological development, which the plant above described certainly is not. Through the kindness of Mr. W. A. Poyser, its discoverer, I possess a fertile specimen, which has a sterile segment with lamina 5 cm. long and 1.5 cm. wide on an attenuate base 12.5 cm. long.

O. VULGATUM f. **lanceolatum** (Clute), n. comb. *O. vulgatum* var. *lanceolatum* Clute, Fern Bull. xix. 72 (1911). Sterile segment with a very long linear base, as above described, due to growth among clumps of sedge. Specimen examined: PENNSYLVANIA: between hummocks in Pratts Swamp, Lima, Delaware Co., 3 July 1908, *W. A. Poyser*.

The plant described from New Jersey some years ago as *Ophioglossum arenarium* E. G. Britton seems, as already noted by Clute, to be merely a starved form of *O. vulgatum*, with narrowly lanceolate leaf situated below the middle of



Fig. 1. *O. vulgatum* f. *pseudopodum*. Leaf from type.

the axis, and as a forma should be known as *O. VULGATUM* f. *ARENARIUM* (E. G. Britton) Clute, Our Ferns in their Haunts, 316 (1901). *O. arenarium* E. G. Britton, Bull. Torr. Club, xxiv. 555, pl. (1897.) *O. vulgatum* var. *minus* Moore, Ferns Gt. Brit. and Ireland, t. 51B3 (1857). *O. vulgatum* var. *microstichum* Moore, Octavo Nat. Pr. Brit. Ferns, ii. 336 (1859). *O. microstichum* Acharius (1809), fide Moore l. c. *O. Grayi* Beck, Bot. N. and Mid. St. 458 (1833). It is represented from North America in the Gray Herbarium only from New York and New Jersey.

STOUGHTON, MASSACHUSETTS.

NOTES ON THE ALGAE OF GEORGIAN BAY.

A. B. KLUGH, M. A.

DURING the latter part of August and the first three weeks of September, 1912, I was engaged in an investigation of the Algae of Georgian Bay, Ontario. The work was done in connection with the Biological Station, Go-Home Bay, Muskoka.

From August 17 to 19 was spent at the Station. On August 20th I started on a trip round Georgian Bay in company with Mr. A. D. Robertson in a motor-boat. We carried a tent and camp outfit, and spent from one to four days at the following points:—Waubauskene; Shawanaga, Parry Sound District; French River, Nipissing District; Killarney, Algoma District; Big Burnt Island; Wekwemikongsing Manitoulin; Rattlesnake Harbour, Fitzwilliam Island; Tobermory; MacGregor's Harbour, Bruce Peninsula; and Collingwood. From these points short runs were made each day for collecting.

It will be noticed that the number of species of Chlorophyceae reported is small; this being due to the lateness of the season as most of the Chlorophyceae are vernal plants, and even if they have not completely disappeared by midsummer they are only in a vegetative condition and not recognizable with certainty. The genera *Spirogyra*, *Zygnema*, and *Oedogonium* were present in many collections but none were in fruit.

CYANOPHYCEAE.

Chroococcus turgidus, Naegeli. Among stems of plants in a dried up marsh on the shore of Georgian Bay at Collingwood, Sept. 19.

Gloeocapsa fusco-lutea, Kuetzing. On rocks in Georgian Bay near Rattlesnake Harbour, Fitzwilliam Island, Sept. 8. Sheaths mostly brownish but some reddish, in color. This is the first Canadian record.

Gloeocapsa rupestris, Kuetzing. In a pool in flat limestone rock on the shore at Tobermory, Sept. 9.

Gloeocapsa ambigua, Naegeli. On rocks near Rattlesnake Harbour, Sept. 8. In pool in limestone rock at Tobermory, Sept. 9. This species has not been previously recorded from Canada.

Aphanothece saxicola, Naegeli. On rocks in Georgian Bay near Rattlesnake Harbour, Sept. 8.

Microcystis marginata, Kuetzing. Shawanaga River, Parry Sound, Aug. 26.

Coclosphaerium kuetzingianum, Naegeli. In plankton, Müller's Bay, Go-Home Bay, Aug. 17.

Merismopedium glaucum, Naegeli. In the French River, Aug. 31.

Oscillatoria tenuis, Agardh. In a small stream into the Shawanaga River, Aug. 27. On dead twigs in a little lake off the Shawanaga River, Aug. 27.

Lyngbya aestuarii, Liebmann. In the North River at Waubauskene, Aug. 24.

Lyngbya aerugineo-caerulea, Gomont. Along the banks of the North River at Waubauskene, Aug. 24. This is the first Canadian record for this species.

Nostoc verrucosum, Vaucher. Shore of the Severn River, Muskoka, Aug. 23.

Nostoc commune, Vaucher. Among stems of plants in a dried up marsh on the shore of Georgian Bay at Collingwood, Sept. 19. Recorded previously in Canada only from Davis Strait.

Nostoc pruniforme, Agardh. Shore of the Severn River, Aug. 23. Not previously recorded from Canada.

Anabaena circinalis, Rabenhorst. Plankton, Go-Home Bay, Aug. 17. This is the first Canadian record for this species.

Anabaena catenula, Bornet & Flahault. On dead twigs in a little lake off the Shawanaga River, Aug. 27.

Anabaena sphaerica, Bornet & Flahault. On leaves of *Nymphaea advena* in lake off Shawanaga River, Aug. 27. This species has not been previously recorded from Canada, or from the Eastern or Middle States.

Cylindrospermum minutum, Wood. Marsh, Killarney, Sept. 4. This is the first Canadian record for this species.

Cylindrospermum muscicola, Kuetzing. On leaves of *Nymphaea advena* in a lake off the Shawanaga River, Aug. 27. Not previously recorded from Canada.

Scytonema myochrous, Agardh. On gneiss rocks at water's edge on Station Island, Go-Home Bay, Aug. 17. In pool in flat limestone rock on the shore at Tobermory, Sept. 9.

Tolypothrix tenuis, Kuetzing. On dead twigs in lake off the Shawanaga River, Aug. 27. Floating at the shore of Georgian Bay, Waubaushene, Aug. 24.

Tolypothrix penicillata, Thuret. Forming a coating of little dark brown tufts on gneiss rocks at the water's edge on Station Island, Go-Home Bay, Aug. 19. Occurring as little brownish-black tufts on limestone rocks just beneath the water near Rattlesnake Harbour, Fitzwilliam Island, Sept. 8. Not before recorded from Canada.

Tolypothrix distorta, Kuetzing. Forming a close brownish hairy coating on gneiss rocks at the water's edge on an island near Collin's Inlet, Algoma District, Sept. 3. This is the first Canadian record.

Calothrix adscendens, Bornet & Flahault. On dead shells of *Unio complanatus* in Georgian Bay at Waubaushene, Aug. 21. Not previously recorded from Canada.

Calothrix parietina, Thuret. On limestone rocks in Georgian Bay near Rattlesnake Harbour, Sept. 8.

Rivularia laurentiana, sp. nov. Coloniis ad 5 mm. diam., globosis, subviridibus, pleurumque solitariis, solidis, firmis sed non calce incrustatis. Filamentis ad 750 μ longis, 5-8 μ diam., densis. Trichomatibus 4-7 μ diam., sensim in setas achroas attenuatis. Vaginis spissis et aequis, 1 μ . crassis. Cellulis 2-10 μ longis. Heterocystis 10-12 μ diam., globosis aut ovatis minore extremitate deorsum versa. Gonidiis semper absentibus.

Colonies up to 5 mm. in diameter, spherical, light green, usually solitary, solid, firm but not incrustated with calcium carbonate. Filaments up to 750 μ in length, 5-8 μ in diameter, crowded. Trichomes 4-7 μ in diameter, tapering to a colorless hair. Sheaths close and even, 1 μ thick. Cells 2-10 μ in length. Heterocysts 10-12 μ in diameter, spherical or ovoid with the small end downwards. Gonidia never present.

Common on aquatic plants. On *Vallisneria spiralis*, *Potamogeton heterophyllus* and *Elodea canadensis* at Waubauskene. On submerged leaves of *Elodea acicularis* in the Severn River, Muskoka. On *Potamogeton perfoliatus* at Shawanaga, Parry Sound. On *Myriophyllum spicatum* in the French River, Nipissing District. I have found this *Rivularia* before in lakes and streams in the Laurentian region and as it seems characteristic of this region I have named it as above.

CHLOROPHYCEAE.

Pandorina morum, Bory. Pool, Shawanaga River, Aug. 27.

Rhaphidium falcatum, Cooke. Pool, Shawanaga River, Aug. 27.

Rhaphidium falcatum aciculare, Hansgirg. Pool, Shawanaga River, Aug. 27.

Nephrocytium agardhianum, Naegeli. Floating at shore, Waubauskene, Aug. 24.

Tetradron regulare, Kuetzing. Plankton, Waubauskene, Aug. 24.

Scenedesmus bijuga, Wittrock. Plankton, Waubauskene, Aug. 24. French River, Aug. 31.

Scenedesmus obliquus, Kuetzing. Pool, Shawanaga River, Aug. 27.

Scenedesmus quadricauda, Brébisson. Among other Algae on leaf of *Nymphaea advena* in lake off the Shawanaga River, Aug. 27. Waubauskene, Aug. 21. French River, Aug. 31. Fishing Island Cove, Manitoulin, Sept. 7.

Coelastrum microporum, Naegeli. Plankton, near Collin's Inlet, Sept. 3.

Pediastrum boryanum, Meneghini. Plankton, Müllers Bay, Go-Home Bay, Aug. 17. Plankton, Waubauskene, Aug. 24. Fishing Island Cove, Manitoulin, Sept. 7.

Pediastrum tetras, Ralfs. Pool, Shawanaga River, Aug. 27. Marsh, Killarney, Sept. 4.

Ulothrix zonata, Kuetzing. On limestone rocks near Rattlesnake Harbour, Sept. 8. On limestone rocks, Bear's Rump Island, near Tobermory, Sept. 9.

Chaetospaeridium globosum, Klebahn. On other Algae on leaf of *Nymphaea advena* in lake off Shawanaga River, Aug. 27.

Chaetophora elegans, Agardh. On dead shells of *Unio complanatus* at Waubauskene, Aug. 21.

Chaetophora incrassata, Hazen. Shore of Severn River, Aug. 21.

Gloiococcus mucosus, A. Braun. Shawanaga River, Aug. 27. Fishing Island Cove, Manitoulin, Sept. 7. Stream into Georgian Bay, Collingwood, Sept. 19.

Coleochaete orbicularis, Pringsheim. On leaves of *Potamogeton lucens* in the French River, Aug. 31.

Coleochaete irregularis, Pringsheim. On leaves of *Nymphaea advena* in lake off Shawanaga River, Aug. 27. This is the first record for this species for Canada.

Cladophora fracta, Kuetzing. Fishing Island Cove, Manitoulin, Sept. 7.

QUEEN'S UNIVERSITY, Kingston, Ontario.

A NORTHEASTERN VARIETY OF *CAREX DEWEYANA*.

M. L. FERNALD.

Carex Deweyana Schwein. is one of the most characteristic sedges in open woods and thickets from the Straits of Belle Isle to British Columbia and south in the Canadian zone, so-called, into the northern States. The species is ordinarily an easy one to distinguish at sight on account of the long interval which separates the remote long-bracted lowest spike from the approximate upper ones. This internode of the rhachis between the lowest spike and the lowermost of the upper ones varies in length from 1 to 3 cm.; and the remote terminal cluster of 2 to 6 spikes usually nods in such a way as to suggest the inflorescence of an overgrown *C. trisperma*.

In the Gaspé Peninsula of Quebec, however, *Carex Deweyana* departs in its inflorescence from the typical plant above described and, as found along the Grand Cascapedia, Grand and Ste. Anne des Monts Rivers, has the spikes all approximate or overlapping, the lowermost subtended by a short or nearly obsolete bract. In luxuriant plants the spikes are often 12 mm. long, so that with its overlapping long spikes and often shortened bract the plant very closely simulates the closer-headed form of the western *C. Bolanderi* Olney, a species with which the writer was at first inclined to place it. Subsequent study, however, shows that in its nerveless perigynia and

smooth scales (somewhat inconstant characters relied upon to separate *C. Deweyana* from *C. Bolanderi*) the Gaspé plant belongs with *C. Deweyana*. In the large mass of specimens of this species examined occasional tendencies toward the Gaspé extreme are found but in all these cases the tendency to crowded spikes is confined to one or two culms on an otherwise typical plant of *C. Deweyana*. As a pronounced variation the Gaspé plant seems to be confined to that limited geographic area. It may be designated:—

CAREX DEWEYANA Schwein., var. **collectanea**, n. var., spicis contiguis.—QUEBEC: alluvial woods, Grand Cascapedia River, July 12–15, 1905, *Williams, Collins & Fernald*, TYPE in Gray Herb.; woods, banks of Grand River, June 30–July 3, 1905, *Fernald*; woods at 600 m. altitude, Macoun's Ravine, north slope of Mt. Albert, August 8–15, 1905, *Collins & Fernald*.

GRAY HERBARIUM.

AN ADDITIONAL NOTE ON NANTUCKET LICHENS.

R. HEBER HOWE, JR.

MR. Eugene P. Bicknell has kindly sent me another small collection of lichens collected on Nantucket Island, Massachusetts (see RHODORA 14: 88–90. 1912) adding the following species:

Group: *Radiatae* Hue.

Family: *Usneaceae*.

Ramalina farinacea (L.) Ach., on "red cedars" at Coatie, July 13, 1912.

Teloschistes flavicans (Sw.) Norm., on "red cedars" at Coatie, July 13, 1912.

Group: *Stratosi-Radiatae* Hue.

Family: *Cladoniaceae*.

Cladonia cristatella Tuck., "on ground," Gibbs' Swamp, July 6, 1912.

" *squamosa* (Scop.) Hoffm., Tom Never's Swamp, July 2, 1912.

Cladonia uncialis (L.) Web., "on ground," Tom Never's Swamp, July 2, 1912.

Cladonia verticillata Hoffm. var. *cervicornis* (Ach.) Flk., "on ground," Gibbs' Swamp, July 6, 1912.

Group: *Stratosae* Hue.

Family: *Parmeliaceae*.

Parmelia saxatilis (L.) Ach. var. *sulcata* (Tayl.) Nyl., on "red cedars," at Coatue, July 13, 1912, and "on boulder," Altar Rock Hill, July 6, 1912.

Family: *Lecanoraceae*.

Lecanora subfusca (L.) Ach. (intermediate toward var. *distans* Ach.), on "red cedars," at Coatue, July 13, 1912. Kindly determined by Dr. H. E. Hasse.

The *Cladonias* were kindly determined by Prof. Bruce Fink.

THOREAU MUSEUM, Concord, Massachusetts.

EXTENDED RANGES OF SOME CONNECTICUT PLANTS.—In a former note (RHODORA, 13:68) I reported *Carex umbellata* Schkuhr var. *brevirostris* Boott from Franklin, a town of eastern Connecticut, twenty miles north from Long Island Sound. I have since examined the central part of the town with considerable care, in order to learn to what extent this variety, having perigynia with short broad beaks, here replaces the more slender beaked species. Franklin is traversed by several ranges of hills, whose broad flat tops, rising to an average altitude of 150 meters, are free from glacial deposits and covered with soil derived from underlying soft micaceous rocks. The slopes of the hills have a similar soil, but in the valleys the surface is mostly gravel. My examination was restricted to the central range of hills and the broad central valley. On the hills, *brevirostris* can be found in every field. It is abundant where conditions favor, and often fairly carpets the ground. In starved soil the plant is small and inconspicuous, but in more fertile spots it grows larger and the leaves are often 30 cm. long. A favorite location is where flat rocks are overlaid by a few inches of dark soil, rich in humus, and it is in such situations, that the most luxuriant tufts are to be found. The plant is less common in the low lands, but it is present on most of the gravel knolls and

ridges and sometimes forms extensive colonies. As a rule it is smaller here and does not fruit so freely, but I have seen beds on the gravel that were loaded with fruit. Both on the hills and in the valley search was made for specimens with slender beaked perigynia. While there is naturally considerable variation in individual plants, I do not feel sure that any of the material collected can properly be classed as a good example of the species, and I conclude that *Carex umbellata* Schkuhr is at least rare in the region examined, although the variety *brevirostris* Boott is so common.

In this connection certain field characters seem worthy of mention. Even when quite ripe and ready to fall, the perigynia have a broadly truncate base, and rarely give any indication of the strongly stipitate base so characteristic of herbarium specimens, and which develops also in the Franklin specimens after drying in the press. Except for a narrow green midrib the scales are essentially white, and this color makes the fruiting spikes contrast prettily with the green of the leaves. There is also a marked tendency toward white in the perigynia, and at some stations the entire body up to the beak is white.

Carex umbellata Schkuhr var. *brevirostris* Boott occurs on the trap ridges about New Haven, and is here associated with the species. Mr. A. E. Blewitt has reported it from the trap ridges of Cheshire, fifteen miles north of New Haven, and it occurs in the towns west of New Haven, the indications being that it is more generally distributed through Southern Connecticut than has been supposed to be the case.

A couple of winters ago I noticed in my herbarium some specimens of *Thalictrum* from Franklin, which had an odd look. Plants collected the next spring and sent to the Gray Herbarium proved to be *Thalictrum dasycarpum* Fisch. & Lall. This is a considerable extension of range, Gray's Manual giving New Jersey as the northern limit of the species in the East.

Festuca rubra (L.) var. *subvillosa* Mert. & Koch is an occasional grass on dry hillsides in Franklin. In 1912, in consequence of "labor troubles" a considerable portion of the lawn remained uncut till midsummer, when I learned to my surprise that the above variety is practically the only grass on this section of the lawn. It is an ideal lawn grass. It forms a soft dense carpet of green, which has not faded perceptibly during the prolonged drouths of recent summers.

Bidens laevis (L.) BSP., hitherto unreported from eastern Connecticut, occurs in Franklin. Its golden yellow flowers are conspicuous,

in late September, in the low wet meadows of the central valley. Specimens of this plant from Franklin have been verified at the Gray Herbarium.—R. W. WOODWARD, New Haven, Connecticut.

A NEW COLOR GUIDE.¹—A new color guide by Dr. Robert Ridgway, the well known ornithologist, is practically an entirely revised and much enlarged edition of his earlier nomenclature of colors (1886) with 17 plates and 186 colors as against 53 plates and 1115 colors in the present work. The color work was done by A. Hoen & Co., of Baltimore and is much more uniform in different copies than in the earlier edition, which was hand stenciled from several mixings of the same color; while in the present work each color for the whole edition of 5000 copies was prepared from one lot of color and uniformly coated at one time. While the present work does not contain quite as many colors as are included in the more bulky French work by Rene Oberthur, the gradation between colors is more uniform, and the colors are on dull instead of glossy-surfaced paper as in that work, which gives a slightly different, but more natural color effect, and no metallic color effects are included. The proportion of darker broken colors is greater, which will appeal especially to the ornithologist and mammalogist, although the work is designed to be equally useful to botanists, florists, artists, dyers, merchants, and chemists who require a standard color scheme. The colors have evidently been standardized to a degree of accuracy not hitherto attained in any color chart. The colors are one-half by one inch, arranged on a heavy gray paper in three vertical columns of 7 colors each. The plates are divided into 6 series. In plates I–XII the middle row of horizontal colors represents the 36 colors and hues most readily distinguished in the spectrum, although it is said to be possible to distinguish 1000. Above these colors each succeeding horizontal row of colors is the spectrum color mixed with 9.5; 22.5; and 45 per cent of white. Below they are mixed with 45; 70.5 and 87.5 per cent of black. Plates XIII–XXVI represent the colors in plates I–XII dulled by 32 per cent of neutral gray; plates XXXII–XXXVIII are dulled by 58 per cent of neutral gray; plates XXXIX–XLIV are dulled by 77 per cent of neutral gray; plates XLV–L are dulled by 90 per cent of neutral gray; and plates LI–LIII are dulled by 95.5 per cent of neutral gray. If the color to be matched is darker than in the first series of plates turn to the same position in the succeeding 5 series of plates until one is found that is dark enough to match. This is readily done by referring to the numbers at the head of the vertical columns and to the letters at the left of the horizontal rows. In numbering and lettering the rows of

¹ Color Standards and Color Nomenclature. By Robert Ridgway, [3447 Oakwood Terrace, N. W.], Washington. Published by the author 1913. Pp. 1–44; pls. I–LIII. \$8.00.

colors every other number and letter has been omitted so that colors that do not exactly match any in the present work, but are intermediate can be designated by a symbol. For example, in plate I the vertical columns are 1, 3, and 5; the tints b, d, and f; and the shades i, k, and m. All the colors are named as well as symbolized, but if a given color comes between Hermosa Pink (1 f) and Eosine Pink (1 d) it could be designated 1 e. In this manner about 2385 additional colors or a total of 3500 can be designated. Undoubtedly exception will be taken to some of the names, but in this the personal equation plays such a large part that decisions must be rather arbitrarily rendered. The primary colors have been standardized by Dr. P. G. Nutting of the U. S. Bureau of Standards.

It was originally expected that six months would suffice for the preparation of the colors, but unforeseen difficulties in reproduction have extended this period to about three years.

A list of color synonyms as shown by the immense list of trade samples that must have accumulated would have formed an exceedingly interesting and valuable addition to the work.

A table of percentages of color, together with an explanation of the amount of white, black, or neutral gray used as above, will give an approximately ready clue to the reproduction of any color in the guide, the only uncertain factor being the possible lack of standardized primary colors to begin with.

Definitions of the principal color terms, such as color, shade, tint, hue, tone, etc., which are used almost interchangeably by many people, will repay careful study by those not familiar with their exact use.

A slight error on page 12, due to a misunderstanding, should be corrected. Mr. F. A. Walpole had no connection with the color project of the American Mycological Society, the preparation of which was delegated to the late Dr. L. M. Underwood, Dr. W. A. Murrill, and the writer. Mr. Walpole died before the committee was appointed, and the project was abandoned after two years' work by the committee in favor of Doctor Ridgway's work, which had not previously come to their notice.—P. L. RICKER, Washington, D. C.

A FLORA OF THE CONNECTICUT VALLEY IN MASSACHUSETTS.—The region centering about Amherst, Massachusetts, has furnished a number of the scholarly "local floras" of New England, beginning with Edward Hitchcock's *Catalogue* in 1817 and including the lists of Tuckerman & Frost and of Cobb. The last of these was published in 1887 and it is natural that many alterations in the knowledge of the flora of the region should have been noted in the intervening period. For this reason the revised *List*, by Professor George E. Stone,¹ with

¹ A List of Plants growing without Cultivation in Franklin, Hampshire, and Hampden Counties, Massachusetts. By George E. Stone, Professor of Botany at the Massachusetts Agricultural College. Amherst, Mass. 1913. pp. vii + 72.

its boundaries extended to include all of Franklin, Hampshire and Hampden Counties, will interest many students of our flora. The present list "contains in all 1190 native and 303 naturalized and adventive species, a total of 1493"; but of this number several, upon critical inspection, must obviously be omitted: such plants as *Lycopodium sabinacifolium* and *L. complanatum*, boreal plants which extend southward only into northern New England and which were not stricken from the list when their Massachusetts representatives, *L. tristachyum* and *L. complanatum*, var. *flabelliforme*, were inserted; *Glyceria fluitans* whose place in Massachusetts is taken by *G. septentrionalis* and *G. borealis*; *Carex adusta*, known in New England only from Hancock County, Maine, but here entered upon the basis of Tuckerman's specimens which, as represented in various herbaria, are typical *C. foenea*; *Epipactis decipiens*, known in New England only in northernmost Maine but often confused (without apparent reason) with our Massachusetts *E. tessellata*; and *Vitis cordifolia*, a plant unknown as far northeast as New England but formerly (and apparently still by some people) confused with our common and distinct *V. vulpina*.

The opportunity for further additions to the list for the Connecticut Valley counties and the value of the field work now being actively prosecuted by the New England Botanical Club are clearly indicated by the fact that collections brought back to the Club Herbarium, chiefly by those who took part in the Greenfield field-day in 1912, contain forty species which are not mentioned in Professor Stone's *List*: *Equisetum pratense*, *Scirpus Peckii*, *Carex Crawfordii*, *C. cephaloidea*, *C. communis*, *Juncus brachycephalus*, *Spiranthes Romanzoffiana*, *Oxalis filipes*, *Teucrium Botrys*, *Antennaria occidentalis*, *A. Brainerdii*, *A. petaloidea*, *Xanthium canadense*, *Bidens vulgata*, etc.; while many local species, listed by Stone from a single station each, were collected at what now appear to be unrecorded stations: *Cryptogramma Stelleri* at Montague and Gill; *Poa alsodes* at Greenfield and Amherst; *Alnus mollis* at Montague and Shellburne; *Dentaria maxima* at Northfield, Gill and Coleraine; *Waldsteinia fragarioides* at Greenfield; *Prunus cuneata* at Montague; etc. From these facts it is clear that our knowledge of the flora of the Connecticut Valley counties is far from complete; and to those who are situated to explore that diversified region, Professor Stone's new *List* will be welcome as a convenient basis for further detailed notes.—M. L. F.

SCIRPUS PECKII IN CONNECTICUT.—While spending my vacation at my brother's home in Barkhamsted and during my time not spent "farming it" I was studying and collecting the flora in that vicinity as I have done on many previous occasions. In an old and wettish meadow, at an elevation of 1025 feet, where an abundance of *Scirpus*

atrocinctus grew, I noticed a few small clumps of a *Scirpus* which, while resembling it, was taller and more erect, with upright spikes and long slender spikelets. The *S. atrocinctus* that grew all about was ripe and falling to pieces, while this sedge was just passing out of blossom. The following day, July 13, 1912, I was collecting in a similar wet meadow about a half mile west of there in the town of Winchester at an elevation of 900 feet, where I came across a small stand of this same *Scirpus*. The nearly related *S. atrocinctus* was also abundant in this meadow with its var. *brachypodus* and with many variations between the typical form and the variety. I identified this *Scirpus* as *S. Peckii* and Mr. C. A. Weatherby, who kindly compared it with specimens at the Gray Herbarium, confirmed my identification. The species is new to Connecticut. This rare sedge has been found in Berkshire Co., Massachusetts, since the publication of the New Gray's Manual, thus greatly increasing its southern range.—ARTHUR E. BLEWITT, Waterbury, Connecticut.

A SUMMER COURSE ON THE FLOWERING PLANTS is being planned in connection with the Summer School of Harvard University. It will be given from July 1 to August 12 in the new George Robert White Laboratories of Systematic Botany, connected with the Gray Herbarium, at the Botanic Garden. The course is to be conducted by Prof. Fernald and will be devoted to the classification and distribution of the Flowering Plants, with special reference to the Flora of New England and the Maritime Provinces. It will consist of lectures, laboratory work, and excursions. Five times a week; lectures at 9, laboratory exercises 10-1. Excursions one afternoon and one whole day each week. The fee for the course is \$30. For further information apply to PROF. M. L. FERNALD, Gray Herbarium, Cambridge, Mass.

TWO RECORDS OF *Panicum calliphyllum* ASHE.—Mr. F. T. Hubbard has lately identified as this rare species my no. 4465, collected at Lakeville, Massachusetts, 25 August 1912, on a sand bank sloping down from dry woods. The only previous collection of the plant known from New England is that made by C. E. Perkins at Medford, Mass., 3 August 1881, recorded by Hitchcock and Chase in

their monograph. It has been found also in New York (the type locality) and Ohio, and has recently been collected at Galt, Ontario, by Mr. W. Herriot, to whom I am indebted for information regarding his find, with permission to record it. Mr. Herriot writes me that he discovered a large clump, growing in company with *Panicum latifolium*, *P. linearifolium*, and *P. xanthophysum*, in land now covered with dry open woods but formerly thickly forested, chiefly with white pine, on 20 July, 1910, since which date he has not met with the species elsewhere.—SIDNEY F. BLAKE, Stoughton, Massachusetts.

CYPERUS GRAYII IN RHODE ISLAND.—While walking along the beach at Westerly, on September 9, 1912, I saw *Cyperus Grayii* in several places and made collections at one of them. This station is of interest, since the report of the species in Rhode Island given in the preliminary list of New England *Cyperaceae* (RHODORA, 10:135) rests upon a printed record and not upon herbarium specimens actually seen. Specimens from Westerly will be deposited in the Gray Herbarium.—R. W. WOODWARD, New Haven, Connecticut.

Vol. 15, no. 172, including pages 65 to 80, was issued 23 April, 1913.

BEST BOOKS IN BOTANY

Andrews's Practical Course in Botany	\$1.25
With Brief Flora of the Eastern United States	1.50
Apgar's Trees of the Northern United States	1.00
Ornamental Shrubs of the United States	1.50
Chapman's Flora of the Southern United States. Third edition	4.00
Coulter, Barnes & Cowles's Textbook of Botany:	
Volume I. Morphology and Physiology	2.00
The same. Part 1. Morphology	1.50
The same. Part 2. Physiology	1.25
Volume II. Ecology	2.00
Coulter & Nelson's New Manual of Rocky Mountain Botany	2.50
Tourist's edition. Limp leather	3.50
Gray's New Manual of Botany. Seventh edition. Illustrated	2.50
Tourist's edition. Limp leather	3.00
Leavitt's Outlines of Botany	1.00
The same. With Gray's Manual of Botany. Sixth edition	2.25
Payne's Manual of Experimental Botany75

DESCRIPTIVE CATALOGUE SENT ON REQUEST

AMERICAN BOOK COMPANY

NEW YORK

CINCINNATI

CHICAGO

BOSTON

HOME GROWN LILIES.

Fresh from Beds. Wild Flowers, Hardy plants of all kinds.
Send for catalogue.

F. H. HORSFORD, Charlotte, Vt.

BOTANY LABELS 85c. PER 1000
POSTPAID

Also, printed envelopes, letterheads and statements
\$1.00 per 1000 plus stock

For samples write to D. LEWIS DUTTON, Brandon, Vermont

CAMBRIDGE BOTANICAL SUPPLY COMPANY,
WAVERLEY, MASS.

BOTANICAL SUPPLIES OF EVERY DESCRIPTION.
Samples of Driers and Mounting Papers sent on request.
ASK FOR NEW CATALOG, NO. 91.

Standard Material.

Immediate Shipment.